

Олімпійський і професійний спорт

УДК 797.21

STRENGTH PREPAREDNESS OF YOUNG SPORTSMEN PREDISPOSED TO SPRINTER AND STAYER DISTANCES

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<https://doi.org/10.29038/2220-7481-2017-04-90-93>

Abstract

The article asserts the necessity to improve the sport training of swimmers, sprinters and stayers. The dynamics of strength preparedness indices of young swimmers belonging to experimental and control groups under the influence of training loads is studied. The influence of the main training aids on the indices of strength preparedness among young athletes aged 12–13 is defined. The divided strength preparedness of sprinters and stayers contributes to the realization of the capabilities of athletes in the competitive process.

Key words: swimming, strength preparedness, sprinters, stayers, training process.

Володимир Давидов, Анна Манкевич, Ольга Морозова. Силова підготовленість юних спортсменів, схильних до спринтерських і стаєрських дистанцій. У статті відзначено потребу вдосконалення спортивної підготовки плавців-спринтерів і стаєрів. Вивчено динаміку показників сигової підготовленості юних плавців експериментальної й контрольної груп під впливом тренувальних навантажень. Визначено вплив основних тренувальних засобів на показники сигової підготовленості юних спортсменів 12–13 років. Розділена сигова підготовленість спринтерів і стаєрів сприяє реалізації можливостей спортсменів у процесі змагальної діяльності.

Ключові слова: плавання, сигова підготовленість, спринтери, стаєри, тренувальний процес.

Владимир Давыдов, Анна Манкевич, Ольга Морозова. Силовая подготовленность юных спортсменов, предрасположенных к спринтерским и стайерским дистанциям. В данной статье представлена необходимость совершенствования спортивной подготовки пловцов-спринтеров и стайеров. Изучена динамика показателей сиговой подготовленности юных пловцов экспериментальной и контрольной групп под воздействием тренировочных нагрузок. Определяется воздействие основных тренировочных средств на показатели сиговой подготовленности юных спортсменов 12–13 лет. Разделенная сиговая подготовленность спринтеров и стайеров способствует реализации возможностей спортсменов в процессе соревновательной деятельности.

Ключевые слова: плавание, сиговая подготовленность, спринтеры, стайеры, тренировочный процесс.

Introduction. The preparation of a full-fledged sports reserve in swimming involves the introduction of sports training in accordance with the objective laws of the sportsmanship formation (Balakshi T. M., 1996; Davydov V. Yu., 2002; Morozov S. N., 1989; Platonov V. N., Sahnovsky K., 1988, Platonov V. N., 2004, etc.) [1–5]. In this case, the irrational is the position at which the swimmers of various specialization, significantly different in terms of sportsmanship formation, athletic condition, structure and content of competitive activity, readiness, individual indicators of physical development, undergo the same training (Sahnovsky K. P., 1990) [7].

This item is entirely related to the technique of swimmers training: sprinters and stayers, who have great differences in the timing of achieving sports results. Separate training of young swimmers predisposed to anaerobic and aerobic work is quite significant [2].

Taking into account the urgency of this issue, the theoretical data and normative documents were analyzed, the best trainers' experience was summarized, and the experimental program for training young swimmers based on the obtained data was compiled. It formed the basis of our study.

Organization and Research Methods. Sixteen swimmers aged 12–13 took part in the study. Young athletes were divided into four groups. Two groups are experimental: sprinters and stayers and two groups are of control: sprinters and stayers.

Training load when swimming as well as exercises of special physical preparedness on land were as close in their direction as possible in all groups and corresponded to the tasks of this preparation phase. The difference between the training programs consisted only in the fact that the experimental groups were trained according to the program compiled by us (Makarenko L. P., Shirkovets E. A., 1992) [3].

The control over the strength training dynamics of young swimmers was carried out according to the following indicators: imitation of the rowing effort on the land, in the mid-stroke phase (with both hands, right and left); maximum pulling force in water (when floating in full coordination, when passing by hand, when swimming with the help of feet); the time of passing 50 and 3000 meters by freestyle was determined; the level of explosive power was estimated by the results of a jump upwards from the place, the coefficient of power endurance was determined. The coefficient of strength capabilities use and the coordination coefficient were also calculated.

The Main Material and Justification of the Research Results. During the training process of young swimmers–sprinters belonging to the control and experimental groups the parameters of the readiness for mesocycles were changed. The preparatory period is characterized by a certain decline in the level of strength preparedness for all studied indicators in all groups, which is characteristic for this period.

The comparative analysis indicates significant changes in all indicators, both in the control and experimental groups (table 1).

Table 1

Dynamics of the Indicators of Strength Preparedness and Speed of Sprinters Swimming During the Training Macrocycle ($M \pm \sigma$)

Indicators		Experimental Group		Control Group	
		Start of the Study	End of the Study	Start of the Study	End of the Study
		$M1 \pm \sigma 1$	$M2 \pm \sigma 2$	$M3 \pm \sigma 3$	$M4 \pm \sigma 4$
Vpassage sailing 50 min/sec.		1,89 \pm 0,03	1,65 \pm 0,05	1,64 \pm 0,03	1,66 \pm 0,04
Vpassage sailing 3000 min/sec.		1,28 \pm 0,02	1,58 \pm 0,03	1,25 \pm 0,04	1,28 \pm 0,03
Absol. F traction on land	right hand	10,9 \pm 0,84	15,5 \pm 1,24	11,1 \pm 0,94	14,0 \pm 0,95
	left hand	10,9 \pm 0,73	15,4 \pm 1,81	10,3 \pm 0,44	13,8 \pm 0,88
	both hands	19,6 \pm 0,99	26,8 \pm 1,44	19,6 \pm 0,88	24,5 \pm 1,35
Traction force in water	on feet	5,2 \pm 1,31	2,4 \pm 0,81	5,3 \pm 1,21	6,5 \pm 0,22
	on hands	10,6 \pm 0,61	13,4 \pm 0,90	10,3 \pm 0,61	13,5 \pm 0,72
	in full coordination	12,6 \pm 0,65	17,4 \pm 0,97	12,3 \pm 0,65	15,5 \pm 0,92
Height of jump upwards, cm		47,8 \pm 0,52	51,9 \pm 3,76	47,1 \pm 0,53	47,9 \pm 0,88
Coefficient of coordination (KK)		77,8 \pm 3,69	85,0 \pm 1,32	77,8 \pm 3,06	82,0 \pm 1,29
Coefficient of strength capabilities use (CSCU)		61,1 \pm 1,34	67,0 \pm 1,02	61,8 \pm 1,06	64,8 \pm 1,11
Strength endurance		57,8 \pm 2,62	61,9 \pm 3,14	57,9 \pm 2,51	61,9 \pm 2,08

With a relatively equal increase in the level of strength endurance (100,6 %), the swimming speed of 3000 meters (99,2 %), the differences are not reliable $P > 0,05$; (108,9 %), as for the maximum force in water, in full coordination (112,5 %), jump height (108,4 %), the differences are relatively significant ($p < 0,05$). The swimmers of the experimental group significantly exceed the data of the swimmers belonging to the control group.

The sprinters of the experimental group showed a higher degree of the strength potential in water: the coefficient of the strength capabilities use increased by 3,2 % in comparison with the control group, and the coordination factor by 2,7 %, the difference was statistically significant ($p < 0,05$). With the same initial level, the sprinters of the experimental group achieved the average swimming speed of the 50 m distance – 1,89 m/s, which is 6,8 % more than the control group swimmers did, the difference is statistically significant ($p < 0,05$).

The increase of this indicator is predetermined by the force factors that characterize sprinter qualities. The sprinters' strength preparedness of the experimental group, based on the accentuated development of force in relation to sprint distances, made it possible to achieve better results.

The results of the stayers strength training of the experimental and control groups are multidirectional in nature (table 2).

Table 2

Dynamics of the Indicators of Strength Preparedness and Speed of Stayers Swimming During the Training Macrocycle ($M \pm \sigma$)

Indicators		Experimental Group		Control Group	
		Start of the Study	End of the Study	Start of the Study	End of the Study
		M1 $\pm\sigma$ 1	M2 $\pm\sigma$ 2	M3 $\pm\sigma$ 3	M4 $\pm\sigma$ 4
Vpassage sailing 50 min/sec.		1,76 \pm 0,09	1,63 \pm 0,05	1,64 \pm 0,07	1,75 \pm 0,07
Vpassage sailing 3000 min/sec.		1,26 \pm 0,68	1,36 \pm 0,05	1,26 \pm 1,33	1,31 \pm 0,05
Absol.F traction on land	right hand	9,9 \pm 0,80	12,8 \pm 0,55	9,6 \pm 0,44	12,7 \pm 0,91
	left hand	9,4 \pm 1,22	12,8 \pm 0,77	9,0 \pm 1,44	12,8 \pm 0,60
	both hands	19,4 \pm 1,59	24,8 \pm 0,74	19,6 \pm 1,78	23,8 \pm 1,05
Traction force in water	on feet	5,0 \pm 0,90	6,4 \pm 0,41	4,9 \pm 0,68	5,9 \pm 0,52
	on hands	10,2 \pm 0,81	13,6 \pm 0,77	10,1 \pm 0,41	12,5 \pm 0,52
	in full coordination	12,0 \pm 0,69	16,9 \pm 1,03	11,9 \pm 0,75	14,9 \pm 0,92
Height of jump upwards, cm		46,8 \pm 2,34	48,0 \pm 2,65	47,3 \pm 2,45	47,4 \pm 2,18
Coefficient of coordination (KK)		78,9 \pm 2,59	84,9 \pm 1,82	79,5 \pm 2,43	81,7 \pm 1,99
Coefficient of strength capabilities use (CSCU)		61,8 \pm 1,25	68,1 \pm 1,39	61,0 \pm 1,99	62,8 \pm 1,41
Strength endurance		58,7 \pm 1,33	67,7 \pm 1,84	59,2 \pm 1,77	63,2 \pm 1,97

At the end of the first mesocycle, characterized by a large amount of training work, the stayers of the control group had a decrease in the traction strength on the land and in water, strength endurance and speed of navigation at the distance of 50 and 3000 meters.

In the experimental group, the changes in the strength preparedness are more balanced and temperate. Due to the suitability of the strength training and the structure of competitive exercises, the swimmers of the experimental group had no decrease in the level of strength capabilities despite the large volume of strength orientation.

One of the integral indicators of the stayers strength preparedness is the strength endurance, which, after the first mesocycle in the experimental group, remained at the same level, while in the control group, the strength endurance decreased from $59,2 \pm 1,71$ to $57,3 \pm 1,58$, the differences are not significant ($p > 0,05$).

At the end of the study the strength endurance increased from $58,7 \pm 1,33$ to $67,7 \pm 1,84$ in the experimental group, the difference is statistically significant ($p < 0,05$), and, from $59,2 \pm 1,77$ to $63,2 \pm 1,97$ in the control group, the difference is not significant ($p > 0,05$). Also there were significant changes in those indices that determine the specificity of the stayer swimming in the experimental group (table 2). The obtained data contribute to a higher achievement of the average speed at the distance of 3,000 meters which influences the results in the stayer swimming.

Conclusions. The ongoing unidirectional process of strength training of sprinters and stayers is not effective enough.

The differentiated strength training of sprinters and stayers, taking into account the structure and content of competitive activities, individual characteristics, accentuated use of means and methods of training, contributes to the effective manifestation of sportsmen strength in competitive distances.

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Стаття надійшла до редакції 14.10.2017 р.